

REMARKS

The Office Action mailed March 13, 2008 has been carefully considered. Within the Office Action Claims 13-17, 35, 51, 52 and 54 have been rejected. The Applicants have amended Claim 51. Reconsideration in view of the following remarks is respectfully requested.

The 35 U.S.C. § 112, First and Second Paragraph Rejections

Claims 13-17, 35, 51, 52 and 54 were rejected under 35 U.S.C. § 112, first and second paragraph, as allegedly not being described in the specification and also being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicants regards as the invention. In particular, it is stated in the office action that the recitation “bonded by molecular adhesion” is not clear. This rejection is respectfully traversed.

Under M.P.E.P. 2173.02, in reviewing a claim for compliance with 35 U.S.C. 112, second paragraph, the examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent. The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (A) The content of the particular application disclosure;
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

In determining definiteness, the examiner should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire. Examiners are encouraged to suggest claim language to applicants to improve the clarity or precision of the language used, but should not reject claims or insist on their own preferences if other modes of expression selected by applicants satisfy the statutory requirement. M.P.E.P. 2173.02

In the present case, the wording for bonding by molecular adhesion is referred to in the specification from page 5, line 1 to page 6, line 30 in which bonding by molecular adhesion is mentioned several times. For at least these reasons, bonding by molecular adhesion is fully supported by the specification and is clearly recited in Claim 54. Accordingly, withdrawal of the rejection is respectfully requested.

Rejection under U.S.C. § 102

Claims 13-17, 35, 51, 52 and 54 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,141,894 to Bisaro et al. (hereinafter "Bisaro"). The Applicants respectfully traverse.

According to the M.P.E.P., a claim is anticipated under 35 U.S.C. § 102(a), (b) and (e) only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

In particular, Figure 4d of Bisaro shows a substrate 10, for example in silicon, comprising superficial layer 13 consisting in a zone disturbed by implantation (see col. 4, 64 to col. 5, 13). A preliminary layer of GaAs is deposited on the superficial layer 13 by epitaxy (see the abstract). Then, the epitaxy of the layer is resumed to form epitaxial layer 16 on layer 11 (see col. 5, 11-

15). A disturbed zone 15 is created, by ion implantation, in layer 16 (see col. 5, 18-19). A final layer 17 is epitaxially grown on layer 16 (see col. 5, 19-23).

On Page 4 of the office action, first paragraph, it is stated that “the epitaxial growth layer reads on the claimed “thin layer” of claims 35 and 54. It is stated in the office action that the layer is understood to be “bonded... by molecular adhesion” because the layers would delaminate if there was not molecular adhesion present.” However, assimilating epitaxial growth layer to a layer bonded by molecular adhesion is not correct.

It should be noted that an epitaxial layer is grown on the substrate whereas molecular adhesion takes two or more structure and bonds them together in intimate contact. In an epitaxial growth scenario, the atoms deposited on a substrate continue the same crystal structure as the substrate. For this reason, the material of the substrate and the material of the epitaxial layer must have lattice constants differing no more than a percent not to introduce misfit dislocations (see pages 9 and 10 of “Semiconductor Wafer Bonding” by Q.Y. Tong and U. Gosele, John Wiley & Sons, Inc).

In contrast, wafer bonding (molecular adhesion) involves surface forces between two faces put into close contact. There is no need that the materials of the elements to join by crystalline and have close lattice constants and the material need not be crystalline. There are mainly three types of surface forces acting between two solids in sufficient proximity: (1) van der Waals attraction forces, (2) electrostatic Coulomb forces, and (3) capillary forces. The strength of the molecular adhesion corresponds to “bonding energy”. The subject matter claimed in Claim 54 is to control the bonding energy to permit the absorption of stresses brought to the complaint substrate.

Accordingly, growing an epitaxial layer as in Bisaro is not and cannot be the same as bonding two surfaces together by molecular adhesion, as expressly recited in Claims 35 and 54.

Considering that Bisaro does not disclose expressly or inherently each and every element in Claims 35 and 54, Bisaro does not anticipate Claims 35 and 54. For at least these reasons, Claims 35 and 54 are allowable.

Dependent claims 13-17 and 51-52 are dependent on Independent Claims 35 and 54 and are thus also allowable.

Conclusion

It is believed that this reply places the above-identified patent application into condition for allowance. Early favorable consideration of this reply is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. Please charge any additional required fee or credit any overpayment not otherwise paid or credited to our deposit account No. 50-1698.

Respectfully submitted,
THELEN LLP

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